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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/915,401	07/27/2001	Lucia Marazzi	05788.0177	7103

7590

06/18/2003

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EXAMINER

AMARI, ALESSANDRO V

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/915,401

Applicant(s)

MARAZZI ET AL.

Examiner

Alessandro V. Amari

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 5-7, 16 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-15, 17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

1. Claims 5-7, 16 and 18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7. Claims 1-4, 8-15, 17 and 19-21 are being examined in this Office Action.

Applicant's election with traverse in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the Examiner's contention that no claims are generic is erroneous. Furthermore, the Applicant asserts that at least claims 1, 8-11, 14, 15, 17, 20 and 21 are generic and read on each of Species I, Species II and Species III. This argument is found persuasive and so claims 1, 8-11, 14, 15, 17, 20 and 21 are held to be generic.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Europe on 28 July 2000. It is noted, however, that applicant has not filed a certified copy of the European application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-4, 8, 11, 13-15, 17 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberts U.S. Patent 5,999,284.

In regard to claim 1, Roberts discloses (see Figure 1) an optical device comprising: (a) a first active medium (9) having a first input port and a first output port arranged to define a first propagation path for traversal of a first optical signal in a first forward direction between the first input port and the first output port; (b) a second active medium (8) having a second input port and a second output port arranged to define a second propagation path for traversal of a second optical signal in a second forward direction between the second input port and second output port; and (c) a feedback path (5, 16, 6) connecting the first and second active media so as to route at least a portion of the first and second optical signals from the first and second output ports to the second and first output ports as respective second and first optical control signals for travel along the second and first propagation paths in second and first reverse directions that are opposite to the second and first forward directions respectively as described in column 2, lines 51-59 and column 4, lines 40-46, column 5, lines 59-67 and column 6, lines 1-2.

In regard to claim 17, Roberts discloses (see Figure 1) a method of modulating an optical signal, comprising: (a) providing first and second active media (8, 9); (b) supplying first and second optical signals to traverse the first and second active media in first and second forward directions as shown in Figure 1; and (c) routing at least a portion of the first and second optical signals, after traversing the first and second active media, to the second and first active media as second and first optical control signals

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respectively, wherein the first and second optical control signals are supplied through the first and second active media in first and second reverse directions opposed to the first and second forward directions so that the first and second optical control signals vary the modulation experienced by the first and second optical signals during their respective traverses of the first and second active media as described in column 2, lines 51-59 and column 4, lines 40-46, column 5, lines 59-67 and column 6, lines 1-2.

Regarding claim 2, Roberts discloses that the first and second output ports face in the same direction as shown in Figure 1.

Regarding claim 3, Roberts discloses that the first and second active media are arranged with their first and second forward directions aligned as shown in Figure 1.

Regarding claim 4, Roberts discloses (see Figure 1) that the feedback path comprises a bend (5, 16, 6) as shown on the right side of Figure 1.

Regarding claim 8, Roberts discloses that the feedback path is a waveguide shared by the first and second optical control signals which propagate along the waveguide in opposite directions as shown in Figure 1 and as described in column 2, lines 51-59 and column 4, lines 40-46, column 5, lines 59-67 and column 6, lines 1-2.

Regarding claim 11, Roberts discloses (see Figure 1) at least one multi-way optical element (15) arranged in the feedback path so as to route a part of at least one of the first and second optical signals from the first and second output ports out of the feedback path for output from the device as described in column 5, lines 59-65.

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Regarding claim 13, Roberts discloses that the first and second active media are discrete components and the feedback path comprises an optical fiber waveguide as described in column 4, lines 3-36 and column 5, lines 59-65 and as shown in Figure 1.

Regarding claim 14 and 20, Roberts discloses that the first and second active media are gain media as described in column 4, lines 3-36.

Regarding claim 15 and 21, Roberts discloses that the first and second active media are lossy media as described in column 4, lines 3-36. Although the prior art does not specifically disclose that the active media are lossy media, this is seen to be an inherent teaching of that device since the active media (i.e., SOAs) are vary the gain of the signals at certain wavelengths and also vary the attenuation of the signals at other wavelengths.

Regarding claim 19, Roberts discloses that the first and second optical signals are variable and the method provides a comparison function as described in column 5, lines 59-67 and column 6, lines 1-20.

5. Claims 17, 19, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Parolari et al. "SOA Based All-Optical Threshold".

In regard to claim 17, Parolari et al teaches (see Figure 1) a method of modulating an optical signal, comprising: (a) providing first and second active media (SOA1, SOA2); (b) supplying first and second optical signals to traverse the first and second active media in first and second forward directions ($P_{in}(\lambda_1)$, $P_{in}(\lambda_2)$); and (c) routing at least a portion of the first and second optical signals, after traversing the first and second active media, to the second and first active media as second and first

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optical control signals respectively, wherein the first and second optical control signals are supplied through the first and second active media in first and second reverse directions opposed to the first and second forward directions so that the first and second optical control signals vary the modulation experienced by the first and second optical signals during their respective traverses of the first and second active media as shown in Figure 1.

Regarding claim 19, Parolari et al discloses that the first and second optical signals are variable, and the method provides a comparison function as described on page 309, 2nd paragraph.

Regarding claim 20, Parolari et al discloses that the first and second active media are gain media so that the first and second optical control signals vary the gain experienced by the first and second optical signals as shown in Figure 1 and as described on page 309.

Regarding claim 21, Parolari et al teaches that the first and second active media are lossy media so that the first and second optical control signals vary the attenuation experienced by the first and second optical signals. Although the prior art does not specifically disclose that the active media are lossy media, this is seen to be an inherent teaching of that device since the active media (i.e., SOAs) are vary the gain of the signals at certain wavelengths and also vary the attenuation of the signals at other wavelengths.

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts U.S. Patent 5,999,284 in view of Nakano U.S. Patent 6,091,540.

Regarding claims 9 and 10, Roberts discloses the invention as set forth above but does not disclose a first optical isolator arranged to filter out the first optical control signals after traversal of the first active medium in the first reverse direction or a second optical isolator arranged to filter out the second optical control signal after traversal of the second active medium in the second reverse direction.

Regarding claims 9 and 10, Nakano teaches utilization of optical isolators (4a, 4b) as shown in Figure 1.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the optical isolators as taught by Nakano in the optical device of Roberts in order to suppress the opposite direction spontaneous emission light traveling from the optical amplifying medium so that higher gain and lower noise is attained.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts U.S. Patent 5,999,284 in view of Official Notice.

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Regarding claim 13, Roberts teaches the invention as set forth above but does not teach that the first and second active media and the feedback path are integrated in a planar waveguide structure. Official Notice is taken that it is notoriously old and well known in the optical device art to integrate the media and feedback path in a planar waveguide structure. It would have been obvious to one having ordinary skill in the art at the time the invention was made to integrate the media and feedback path in order to provide for a more compact device.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *AM*
June 12, 2003


MARK A. ROBINSON
PRIMARY EXAMINER